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The invention relates to an air conditioner for a front area and a rear with in each case a left and right seat zone exhibiting passenger compartment in accordance with the preamble of the claim 1.

With a known air conditioner of this type (DE 198 11 452 c1) are at the outputs that the rear associated both air mixing chambers pivotal shut-off valves disposed, which lock the associated output in their for swivelling position and in its other swivelling position complete release, and between each air mixing chamber for the rear and each air mixing chamber for the front area a swivelling flap is disposed, which separates and in its other swivelling position interconnects the two air mixing chambers for rear and front area in their swivelling position. It is possible to make with not-occupied rear the entire air amount more available the ventilation of the front area and to use thus the thermal output optimum supplied by the heat exchanger.

The invention is the basis the object to improve an air conditioner that initially mentioned type going by that the cooling or heating power is if necessary to amplified in the front area or in the rear at the disposal, without becomes sensitive disturbed thereby the room climate in that different range in each case.

The object is according to invention by the features of the claim 1 dissolved.

The air conditioner according to invention has the advantage that over the air mixture control members the middle air mixing chambers are connectable to the upper or lower air mixing chambers alternatively, depending on whether in the front area or in the rear a larger air requirement at cold or warm air exists. It is also possible to in each case partly connect the middle air mixing flaps with the two lower and upper air mixing chambers so that the air achievement available in the middle air mixing chambers can become also defined divided and for example an uniform air achievement in the front area and in the rear manufactured. The adjustment of the auxiliary air achievement from the middle air mixing chambers is thereby continuous between the boundaries zero and full for the upper and lower air mixing chambers possible. Beyond that priorities of the ventilation can become provided for certain appliques. So z can. B. with chief vehicles the front area or in the case of luxury sedans the rear preferred with large air achievement supplied become.

Favourable embodiments of the air conditioner according to invention with convenient developments and embodiments of the invention are in the other claims indicated.

The invention is more near described on the basis embodiments represented in the drawing in the following. Show in each case in schematic illustration:

Fig. 1 a longitudinal section of a climatic box of an air conditioner for vehicles,

Fig. 2 a section along the line II-II in Fig. 1,

Fig. 3 a ausschnittsweise longitudinal section of a modified climatic box in the range of the air mixing chambers,

Fig. 4 a same illustration as in Fig. 1 of a climatic box in accordance with a third embodiment.

The air conditioner for a passenger compartment of a vehicle, in particular a passenger car, points one in Fig. 1 schematic climatic box 11 represented in the section up, is input connected at which here a not represented blower and which at the output exhibits a variety from air outlet connecting pieces to the terminal of disposed air outlets distributed in the passenger compartment. For the air conditioning of the passenger compartment these in four seat zones with two seat zones are divided on the left and on the right the passenger space center in the front area and two seat zones on the left and on the right the passenger space center in the rear. The air outlet provided connected at the climatic box 11 with air nozzles distributed are and at different air outlet connecting pieces of the climatic box 11 connected on the four seat zones

in the passenger compartment. Everything in Fig. 1 air outlet connecting piece which can be seen are twice present, once for the left and right passenger space half. The air outlet connecting pieces 12 for the terminal of defroster nozzles at the windshield are, the air outlet connecting pieces 13 and 14 for the terminal of the air outlets left and/or. right in the median plane of the front area (centre outlet, side nozzle), the air outlet connecting pieces 15 to the terminal of the air outlets on the left and on the right in the floor space of the front area (footwell outlets) the air outlet connecting pieces 16 for the terminal of the air outlets on the left and on the right in the median plane rear (centre outlets), the air outlet connecting pieces 17 to the terminal of air outlets on the left and on the right in the B-column in the rear and the air outlet connecting pieces 18 for the terminal of the air outlets on the left and on the right in the floor space rear of the provided.

In the climatic box 11 seen are one behind the other with distance from each other an evaporator 19 and an heat exchanger 20 disposed in air flow direction, whereby between them a cool air area 21 is formed. At the floor of the cool air area 21 a Wasserabfluss is 22 provided for the drain of settling condensed water. At the air outlet-flat 201 of the heat exchanger 20 altogether six air mixing chambers tapped, which are on the one hand 28 from each other separate by a vertical partition 26, which reaches opposite boundary wall 111 of the climatic box 11 to the heat exchanger 20 from the air outlet-flat 201 of the heat exchanger 20 up to that, and on the other hand by two times two horizontal partial partitions 27, those from the air outlet-flat 201 of the heat exchanger 20 free are auskragend the inlet region of the air, mixing chambers 23, 24, 25 from each other separate. The vertical partition 26 to the separation of the three right, vertical superimposed air mixing chambers 23, 24, 25 of the left, vertical superimposed air mixing chambers, of those in Fig. 2 only the middle air mixing chamber 25 ' to see is, is in Fig. 2 to see, the two horizontal parts of partitions 27, 28 between the right, vertical one above the other disposed air mixing chambers 23, 25 is in Fig. 1 to see. In Fig. 2 is to be seen the additional two lower partial partitions 28 and 28 '. Those altogether six air mixing chambers 23-25 cover at the input side in their entirety the entire air outlet-flat 201 of the heat exchanger 20. The two upper air mixing chambers 23 the air outlet connecting pieces 12-15 for in each case the right and left side of the front area go off, and of the two lower air mixing chambers 24 the air outlet connecting pieces 16-18 for the rear, after left and right rear side, go off again separate.

Everyone of the six air mixing chambers 23, 24, 25, 25 ' is at the input side on the one hand the air outlet-flat 201 of the heat exchanger 20 with a part covering warm air control member 29 and/or. 29 ' and on the other hand with a cool air control member 30 and/or. 30 ' provides, a connection to a cool air channel 31 flowing in the cool air area 21 and/or. 31 ' steers. In Fig. 2 cool air channels 31 and 31 ' which can be seen ' are led around around the heat exchanger 20 and to extend itself over the entire vertical height of the heat exchanger 20.

The warm air control members 29, 29 ' are thereby direct at the air outlet-flat 201 of the heat exchanger 20 so disposed that they take the air outlet-flat off 201 in their entirety complete in their closed position. Warm air control members 29, 29 ' operable of separate drives 42, the 42 ' are as so-called. Dazzling or Jalousieverschlüsse 32, 32 ' with a plurality of swivelling lamellas 33 formed, while the cool air control members are 30, next to each other disposed in the parallel distance, 30 ' executed as double swing, rigid swivelling flaps 34, 34 '. From the cool air area 21 still two cool air bypasses lead 35 above the heat exchanger 20 past this and flow into the air outer footstep connecting piece 13 for the left and right median plane of the front area of the passenger compartment. By more or less far opening of a shut-off valve 36 disposed in each cool air bypass 35, the conditioned air flowing of the upper air mixing chambers 23 into the median plane of the front area cold air admixed and so the temperature in the median plane of the front area can more or less become in relation to the temperature in the floor space of the front area lowered.

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The two middle air mixing chambers 25, 25 ' are output with an air mixture control member 37 and/or. 37 ' provide, which is so formed that it the associated middle air mixing chamber 25 and/or. 25 ' depending upon position with the upper and/or lower air mixing chamber 23 and/or. 24 connects. In the embodiment of the Fig. 1 and 2 is the air mixture control member 37 and/or. 37 ' as if swivelling flap 38 test flight-lies and/or. 38 ' formed, their pivot axis 39 and/or. 39 ' at that the heat exchanger 20 opposite, the air mixing chambers 23, 24, 25 ' limiting boundary wall 111 of the climatic box 11 central disposed is and parallel to the input partial partitions 27, 28 of the middle air mixing chambers 25, 25 ' runs. The swivelling flap 38 and/or. 38 ' hands with their from the pivot axis 39 and/or. 39 ' cleared away free end in their swivelling position up to the lower partial partition 28 and in their other swivelling position up to the end of the upper partial partition 27. In Fig. 1 and 2 taken off represented swivelling position of the swivelling flap 38 and/or. 38 ' is the associated air mixing chamber 25 and/or. 25 ' to the vertical above, upper air mixing chamber 23 connected, so that the front area becomes supplied over the upper and middle air mixing chambers 23, 25, 25 ' with a larger air achievement. In Fig. 1 paint-lines suggested other swivelling position is the reverse two middle air mixing chambers 25, 25 ' with the two lower air mixing chambers 24 connected, so that the larger air achievement is available now in the rear. The operation of the swivelling flap 38 and/or. 38 ' made over a drive 40 and/or. 40 ', z. B. an electric servomotor, which can become from a control device in the front area and from a control device in the rear from driven. The drive of the swivelling flap 38 and/or. 38 ' made with it corresponding for the front area and the rear laid out rule curves. Each swivelling flap 38 and/or. 38 ' is a separate drive 40 and/or. 40 ' (Fig. 2) associated. Alternate ones can become both swivelling flaps 38, 38 ' driven synchronous of a single drive. In this case also the vertical partition 26 in the range of the two middle air mixing chambers would know 25, 25 ' remote and the two swivelling flaps 38, 38 ', just as the two Jalousieverschlüsse become input 32, 32 ' the middle air mixing chambers 25, 25 ', in each case integral executed with one another.

As in Fig. 1 schematic indicated is, can in the rear control device 43 manual operable remainder warming branch 41 disposed be, which can become manual operated during rear allocation. If those becomes remainder warming branch 41 operated, then the rear control device 43 steers the drives 40, 40 ' of the swivelling flaps 38, 38 ' in such a way that the middle air mixing chambers 25, 25 ' 24 connected with that the rear seat zones associated lower air mixing chambers. By these remainder warming branch 41 the rear passengers become during the utilization of remainder warm in the climatic box 11 preferred. This change-over of the swivelling flaps 38, 38 ' made independent of the previous adjustment of the swivelling flaps 38, 38 ', so that during the remainder utilization of heat the larger heating power is to the rear at the

disposal.

As other shown is not here, rear can be the seat allocation recognizing sensor disposed, that during seat allocation the drive 40 and/or in the seat zones. 40 ' for the swiveling flap 38 and/or. ' it steers 38 in such a way that the middle air mixing chamber 25 and/or. 25 ' at least for a predeterminable period after seat allocation with this seat zone the lower air mixing chamber 24 connected associated in the rear is. In this way at least the occupied seat becomes preferred with higher air achievement supplied with beginnings of the rear seat allocation, so that the here quick desired climate adjusts itself.

With In Fig. 3 cutout of a climatic box 11 in accordance with an other embodiment, represented in the longitudinal section, is only each middle air mixing chamber 25 at the output associated air mixture control member 37 modified. Each air mixture control member 37 covers, a double swing, upper swiveling flap 45 disposed in the range of the upper partial partition 27 and, a double swing, lower swiveling flap 46 disposed in the range of the lower partial partition 28. The pivot axes 47 and 48 of the two swiveling flaps 45, 46 are again parallel 28 aligned to the partitions 27. Each swiveling flap 45 and/or. 46 is so formed that them in their swivelling position of that the heat exchanger 20 opposite boundary wall 111 of the climatic box 11 up to the free auskragenden ends of the associated partial partition 27 and/or. 28 hands, so that in this swivelling position the upper swiveling flap 45 separates the associated middle air mixing chamber 25 from the upper air mixing chamber 23 and the lower swiveling flap 46 the associated middle air mixing chamber 25 from the lower air mixing chamber 24. The two swiveling flaps 45, 46 are coupled either with one another and of a single drive driven or with a separate drive provided. By this formation of the air mixture of control member 37 with two separate swiveling flaps 45, 46 additional still air from the third air mixing chamber can be taxed away. In Fig. 3 taken off represented position of the swiveling flaps 45, 46 becomes the front area with larger air achievement supplied. Additional still air from the lower air mixing chamber 24 is taxed away, which becomes 23 supplied over the middle air mixing chamber 25 of the upper air mixing chamber. In Fig. 3 represented swivelling position of the swiveling flaps 45, 46 becomes the rear with larger air achievement applied paint-lines. Additional one is taxed away still air from the upper air mixing chamber 23 and over the middle air mixing chamber 25 of the rear ventilation for the order provided.

With In Fig. 4 in the longitudinal section schematic represented climatic box 11 in accordance with a third embodiment is again those the two middle air mixing chambers of 25 at the output associated air mixture control members 37 modified. Here each air mixture control member is 37 49 formed as air guidance element, which is at that the heat exchanger 20 opposite boundary wall 111 of the climatic box 11 relocatable disposed and reaches in its two shifting end positions of the boundary wall 111 up to the free end of one of the two auskragenden partial partitions 27, 28. Each air guidance element 49 exhibits a Keilprofil, whose flanks are concave curved. The relocatability of the wedge shaped air guidance element 49 is 50 indicated by arrow. Without the illustration of the associated drive one did to each air guidance element 49. Also here the two air guidance elements can be 49 for the left and right middle air mixing chambers 25 coupled with one another and of a common drive applied, preferably are however each air guidance element 49 a separate drive associated.

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1. Air conditioner for a front area and a rear with in each case a left and right seat zone exhibiting passenger compartment, with a climatic box (11), in cold air tapped, immediate effluent from the heat exchanger (20), at the air outlet-flat (201) of an heat exchanger (20) four air mixing chambers (23, 24) to the mixture of warm air with the heat exchanger (20) are, which are output connected with ever one of the four seat zones to their ventilation with conditioned air, characterised in that between everyone at the upper part and everyone at the lowermost part of the heat exchanger (20) tapped in each case air mixing chamber (23, 24) at the heat exchanger (20) a middle air mixing chamber (25, 25') tapped is, at the input side on the one hand with a central part the air outlet-flat (201) of the heat exchanger (20) covering warm air control member (29 and/or. 29') and on the other hand with the supply of cool air (21) a controlling cool air control member (30 and/or. 30') and at the output with an air mixture control member (37 and/or. 37') versehen ist, und dass die Mischluft-Steuerorgane (37, 37') so ausgebildet sind, dass sie die zugeordnete Luftmischkammer (25 bzw. 25') depending upon position with the upper and/or lower air mixing chamber (23, 24) connect.

2. Air conditioner according to claim 1, characterised in that the drive of the output air mixture of control members (37, 37') with a rule curve made laid out for the front or rear seat zones.

3. Air conditioner according to claim 1 or 2, characterised in that each air mixture control member (37 and/or. 37') a separate drive (40 and/or. 40') to its displacement associated is.

4. Air conditioner according to claim 1 or 2, characterised in that the air mixture control members (38, 38') a common drive to the synchronous displacement exhibit.

▲ top 5. Air conditioner after one of the claims 1-4, characterised in that each air mixture control member (37 and/or. 37') as if swivelling flap (38 test flight-lies and/or. 38') formed is, their pivot axis (39 and/or. 39') at that the heat exchanger (20) opposite boundary wall (111) of the middle air mixing chambers (25, 25') central disposed is and with their from the pivot axis (39 and/or. 39') cleared away free end in their swivelling position up to at the input side the middle air mixing chamber (25 and/or. 25') of the upper air mixing chamber (23) separating tops partition (26) and in their other swivelling position up to at the input side the middle air mixing chamber (25 and/or. 25') of the lower air mixing chamber (24) separating lower partial partition (28 and/or. ') hands 28 (Fig. 1 and 2).

6. Air conditioner after one of the claims 1-4, characterised in that each air mixture control member (37 and/or. 37') a double swing upper and a double swing lower swivelling flap (45, 46) covers and that each swivelling flap (45, 46) in their swivelling position of that the heat exchanger (20) opposite boundary wall (111) of the middle air mixing chambers (25, 25') up to a part partition (27 and/or. '), those hands 28, 28 at the input side the middle air mixing chamber (25 and/or. 25') of the upper and/or. lower air mixing chamber (23 and/or. 24) separates (Fig. 3).

7. Air conditioner after one of the claims 1-4, characterised in that each control member (37 and/or. 37') as air guidance element (49) formed is, that at that the heat exchanger (20) opposite boundary wall (111) of the middle air mixing chambers (25, 25') vertical relocatable disposed is input and in its two shifting end positions of this boundary wall (111) up to the middle air mixing chamber (25 and/or. 25') of the upper and/or. lower air mixing chamber (23 and/or. 24) separating partial partition (27 and/or. ') hands 28, 28 (Fig. 4).

8. Air conditioner according to claim 7, characterised in that the air guidance element (49) a Keilprofil exhibits, whose flanks are concave curved.

9. Air conditioner after one of the claims 4-8, characterised in that the air mixture control members (37, 37') integrally formed with one another are.

10. Air conditioner according to claim 9, characterised in that those the middle air mixing chambers (25, 25') of associated warm air controls (29, 29') integrally formed with one another are.

11. Air conditioner after one of the claims 3-10, characterised in that the drive of the drives (40, 40') of the air mixture of control members (37, 37') over in the front area and a control device disposed in the rear is distinguishable.

12. Air conditioner according to claim 11, characterised in that in the rear control device manual operable remainder warming branch (41) is disposed and that in such a way with operation the remainder warming branch (41) the rear control device heads for the drives (40, 40') of the air mixture of control members (37, 37') that the middle air mixing chambers (25, 25') with that the rear seat zones associated air mixing chambers (24) are connected.

13. Air conditioner after one of the claims 3-12, characterised in that in the seat zones rear the seat allocation recognizing sensor disposed is, in such a way which steers the drives (40, 40') of the air mixture control members (37, 37') during seat allocation that at least the middle air mixing chambers (25, 25') are for a predeterminable period after seat allocation with that rear seat zones associated air mixing chambers (24) connected.

14. Air conditioner after one of the claims 1-13, characterised in that the upper air mixing chambers (23) with ever one of the front space seat zones and the lower air mixing chambers (24) with ever one of the rear seat zones connected are.

15. Air conditioner after one of the claims 1-14, characterised in that the upper and lower air mixing chambers (23, 24) at the input side in each case on the one hand with a part of the air outlet-flat (201) of the heat exchanger (20) covering warm air control member (29) and are on the other hand with a connection a cool air area (21), formed to one between an evaporator (19) and the heat exchanger (20) in the climatic box (11), controlling cool air control member (30) provided.

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